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## NOTES AND BRIEF ARTICLES

Dr. V. H. Young, formerly of the Botanical Department of the University of Wisconsin, has been appointed professor of botany in the State University of Iowa, in charge of mycology and plant physiology.

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Dr. Alban Stewart, instructor in botany at the University of Wisconsin, has been appointed professor of botany and bacteriology in the Florida State College for Women at Tallahassee, Florida.

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Dr. J. C. Arthur and Professor H. S. Jackson, of Lafayette, Indiana, have been granted research scholarships for the month of January. They will continue work on the plant rusts for *North American Flora*.

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Newton B. Pierce, formerly plant pathologist for the U. S. government for the Pacific coast region, died at his home in California on October 13, aged sixty years.

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Professor J. C. Arthur recently received the degree of Doctor of Laws from the University of Iowa. In conferring the degree, Professor Macbride placed special emphasis on Professor Arthur's contributions to agriculture and horticulture in the study of plant diseases; his work in physiological botany; and his fundamental studies in mycology, especially in the plant rusts. Professor Arthur has the distinction of being the first botanist appointed to an American experiment station.

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*Helicostylum* and *Cunninghamella*, two genera of the Mucorales new to America, were reported from Michigan by A. H. W. Povah in the seventeenth annual report of the Michigan Academy of Science.

"The Comparative Histology of Certain Californian Boletaceae," by Dr. H. S. Yates, is a recent publication of decided merit from the department of botany of the University of California. There is opportunity for this harmonious blending of morphology and taxonomy in most groups of fungi.

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The report of the Selby Smelter Commission recently issued as Bulletin 98 of the Bureau of Mines at Washington contains valuable information regarding the effect of smelter gases on various forms of vegetation, including fungi. The last twenty pages of the report are devoted to a bibliography on the injurious effects of sulfur dioxide.

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The list of unreported Michigan fungi for 1911-1914, by C. H. Kauffman, covers about twenty pages in the seventeenth annual report of the Michigan Academy of Science, half of which are devoted to rusts. The example set and so patiently followed by Dr. Kauffman is highly commendable and worthy of imitation by mycologists in every state.

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The great quantity of *Coprinus comatus* which often springs up in newly made streets and roads suggests that some method might be devised for cultivating this attractive and well-flavored edible species; which could not be shipped nor exposed long in the market, but would be valuable if grown in one's garden. This is an experimental problem suitable for almost any careful and patient student.

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A recent bulletin by John R. Johnston on the present status of the cocoanut budrot disease states that the export of cocoanuts from Baracoa, Cuba, in 1898 was 24,000,000 nuts and in 1915 only 4,000,000. In Jamaica, a law was passed in 1911 to prevent the spread of infectious diseases, with the result that the budrot disease has caused little damage there since. The disease has not yet reached Florida, the Bahamas, Porto Rico, Panama or Mexico.

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Dr. S. M. Stocker, of Duluth, Minnesota, recently sent in specimens of *Lentinus strigosus*, which in the fresh state had an odor

resembling that of slippery elm. Dr. Stocker not only tested the specimens himself, but submitted them to two drugs clerks independently and both of them promptly agreed with him. Dr. Stocker calls attention to the fact that Massee says that the odor of this species is spicy and W. Smith states that it smells pleasantly of anise.

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Romell, in a recent number of the *Svensk Botanisk Tidskrift*, explains the brown powder occurring on the upper surface of hymenophores of *Ganoderma lucidum* and *Elfvigia applanata* as true spores from the basidia wafted upward by currents of air and allowed to settle on the hymenophores and nearby objects, where they adhere by means of their gelatinous coats. This would upset the conidia theory. The air currents are explained by Romell as follows:

"It is perhaps not unreasonable to suppose that from the ground heated during a hot day arise during a following cold and calm night upwardly directed air currents, which though very feeble and perhaps not perceptible to our senses, yet are strong enough to force the falling spores upwards, so that these are caused to hover in the air above their native place a more or less long while ere they are allowed to fall again and land on the upper side of objects lying in their way."

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A splendid specimen of *Inonotus dryophilus* was obtained on December 4, 1916, from the trunk of a living white oak which stands in the Hemlock Forest near the Waterfall. It grew about 25 feet from the base of the tree and emerged from a small knot-hole. In the autumn of 1908, a smaller, more resupinate specimen was taken from near the base of the same tree and reproduced in color in *Mycologia* for May, 1909. During the intervening years, a few very small hymenophores have appeared at various times at different knot-holes on the trunk, but so far as known the tree has never produced a specimen of such proportions as the one just collected. The trunk of the tree must be badly decayed by this time, and many of the lower branches have disappeared.

A new disease of *Paulownia tomentosa*, caused by *Valsa Paulowniae*, is described by Takewo Hemmi in a recent number of *The Botanical Magazine* of Tokio, Japan. This disease attacks the branches and trunks of *Paulownia tomentosa* without regard to its age, but the young trees three or four years old are most liable to attack. In the case of a young tree, the disease appears first at the tip of the clear trunk in the early spring. The bark of the affected part turns brown in color, as if killed by freezing. The discolored portion gradually increases its area, extending downward toward the thicker portion of the stem. From May to June, the disease progresses most rapidly, and in consequence the tree is killed, with an appearance of "die-back." The fungus enters the tree through a wound having a layer of dead cells on its exposed surface, in which a mass of mycelium is first formed. In the vicinity of Sapporo, the winter injury due to the very low temperature is the most common and powerful agency in inducing the spread of this disease.

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#### NEW COMBINATIONS

Most of the new species published in *North American Flora*, volume 9, part 6, belong to the genus *Clitocybe*, which is commonly accepted by mycologists. For others, the following new combinations are here proposed:

HYDROCYBE CALIFORNICA = *Hygrophorus californicus*

CAMAROPHYLLUS ANGUSTIFOLIUS = *Hygrophorus angustifolius*

CAMAROPHYLLUS AURATOCEPHALUS = *Hygrophorus auratocephalus*

The only species published in *Mycologia* last year that need be recombined is the following, described on p. 113:

MELANOLEUCA OLIVACEIFLAVA = *Tricholoma olivaceiflavum*

Species published in *Mycologia* for 1915, on pp. 44 and 222, may be recombined as follows:

ROSTKOVITES CALIFORNICUS = *Boletus californicus*

GYMNOPILUS FARINACEUS = *Flammula farinacea*

W. A. MURRILL.

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#### TWO NEW SPECIES OF FLESHY FUNGI

*Gymnopus Ellisii* Murrill, sp. nov.

Pileus minute, convex, becoming depressed, gregarious, 2 mm. broad; surface milk-white, dry, minutely pubescent, margin at

first incurved; lamellae adnate, becoming slightly decurrent, narrow, not crowded, white; stipe slender, hollow, pulverulent, white, pubescent at the apex, mycelioid at the base, 1-1.5 cm. long, less than 1 mm. thick.

Type collected on leaves and twigs of white cedar in a swamp at Newfield, New Jersey, October, 1875, *J. B. Ellis* (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Known only from the type locality.

***Omphalopsis pallida* Murrill, sp. nov.**

Pileus conic to convex, becoming umbilicate, gregarious, 1.5 cm. broad; surface dry, smooth, minutely silky, not striate, pallid, pale-avellaneous on the disk; lamellae decurrent, especially when young, arcuate, distant, broad, white; spores ellipsoid, smooth, hyaline,  $7-8.5 \times 4-5 \mu$ ; stipe very slender, cartilaginous, equal, smooth, hyaline, white, 2-3 cm. long, 1 mm. thick.

Type collected in soil on a roadside bank at Lake Placid, Adirondack Mountains, New York, October 3-14, 1912, *W. A. & Edna L. Murrill* 1093 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Known only from the type locality.

For the benefit of those using Saccardo's nomenclature, the following new combinations are proposed:

GYMNOPUS ELLISII = *Collybia Ellisii*

OMPHALOPSIS PALLIDA = *Omphalia pallida*

W. A. MURRILL.

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AN EPIDEMIC OF RUST ON MINT

During the summer of 1915, an epidemic of rust (*Puccinia Menthae* Pers.) developed in gardens at Hanover, New Hampshire. The disease was first discovered about the middle of June, or about two weeks after the beginning of a long period of heavy and almost continuous rainfall. The chocolate-brown sori broke out on the leaves of the mint and increased with such rapidity that by the early part of August the plants were rendered unfit for table use.

Since this is the first attack of the disease in this locality, at least so far as the writer can determine, and since the rainfall was far above that of a normal season, it became a matter of interest

to determine whether or not the rust would reappear. For this reason the infected growth was left undisturbed in the fall, and no attempt was made to control the disease.

Throughout the present summer the mint beds have been carefully watched but no trace of the rust has been found at any time.

These observations, though somewhat superficial, would seem to indicate that this rust, which is capable of destroying the foliage of the mint plant during a wet season, may become entirely inactive with the return of a normal season.

A. H. CHIVERS.

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#### SOME PAPERS PRESENTED DURING CONVOCATION WEEK

At a joint session of the Botanical Society and the Phytopathological Society held Friday afternoon, December 28, in connection with the American Association for the Advancement of Science, a number of papers were delivered which were of interest to mycologists.

The first paper of the afternoon was presented by Dr. J. C. Arthur, of Purdue University. After briefly outlining the results of his work on the rust cultures for the season, he gave a very interesting retrospect of his work on rust cultures beginning in 1899. Previous to this time, it had been pretty generally agreed that each rust had a definite life cycle consisting of several stages often borne on different host plants, but the life histories of few species were well known.

About this time a visit was made to Charles B. Plowright of England and his methods of culturing rusts studied carefully. These methods were very simple and consisted in sprinkling a barberry bush with water from an ordinary sprinkling can. The teliospores were then removed from some grass and placed on the leaves of the barberry. The plant was again sprinkled and placed under a belljar, where it was allowed to remain for several days. The belljar was then removed and in due time the rust infection appeared.

On returning to America these methods were employed with some modifications in working out the life histories of various species of rusts. The work has been continued up to the present time and the results published at intervals in various scientific

journals. Some time was also spent in outlining the changes in our ideas of what constitutes a species in the rusts. The differences of opinion regarding physiological and morphological species were considered.

Following this paper, I. E. Melhus called attention to his observations on the development of aecia on red clover in the greenhouse. Although several other clovers grew in close proximity, they remained entirely free from infection. Attempts to inoculate other clovers with the aecia from red clover were unsuccessful.

In the absence of G. R. Bisby, Dr. Arthur outlined briefly the contents of his paper, dealing with the rusts on the Onagraceae. Several species have formerly been recognized which have slight morphological variations. These apparent differences, however, become less conspicuous as the number of specimens increase. Mr. Bisby has concluded that these supposed species represent one very variable species in which several races or strains can be separated with very slight morphological variations.

A paper by W. H. Davis and A. G. Johnson on the aecial stage of the red clover rust was presented by Mr. Johnson. Examination of red clover from a number of fields showed aecia to be present in all except one. A request was then sent out for red clover plants from various localities. Over half of them showed aecia. Teliospores were used to make sowings and from these aecia were again obtained, showing the rust to be autoecious.

In the absence of E. B. Mains, Dr. Arthur also outlined his paper. Until recently, no species of *Melampsora* has been known in the Western Hemisphere on *Euphorbia*. In one year three such species have been reported, occurring from Maine to Wyoming. One of these was doubtless imported, while the one occurring in Indiana was probably native but identical with a European species. This sudden occurrence of a class of rusts formerly unknown in America in such widely separated localities is regarded as rather a remarkable phenomenon.

Dr. Arthur, in the absence of Mr. Bisby, also mentioned his paper on the short-cycled species of *Uromyces* in North America. Also, in the absence of C. A. Ludwig and C. C. Rees, the same speaker made a brief mention of their work on the structure of the uredinium in *Pucciniastrum Agrimoniae*.



The next paper was by John A. Elliott on a new parasitic slime-mold suitable for class work. This slime-mold causes a very serious disease of sweet potatoes. There are two methods of infection, one by means of swarm spores and one by means of the plasmodium. Spots are caused by the plasmodium entering the young rootlets. The plasmodium finally migrates from the wounds, leaving pits. The paper was well illustrated by lantern slides. Considerable discussion followed.

Dr. Arthur again covered the main points in Mr. Rees's paper on the *Fritillaria* rusts of Europe and America. From his studies it was concluded that there were two species of rusts on *Lillium* and *Fritillaria* hosts and that the American species were different from the European.

R. H. Colley spoke of the difficulty of diagnosing the white-pine blister disease before the spores are developed. It has been found by him that the pycnial scars are very characteristic and with experience can be used in detecting the presence of the disease. A number of slides were shown, illustrating the pycnial scars and also the rusty color of the mature spores.

The Uredinales of the West Indies were next treated by Dr. Arthur. This study was taken up a year ago in connection with extensive collections of F. L. Stevens, who for some time past has been making a study of the parasitic fungi of Porto Rico. In addition to these, Drs. Olive and Whetzel collected a number of species not previously known. Other collectors have added to the list, including Mr. Percy Wilson and other collectors from the New York Botanical Garden. The total number of species known from the West Indies is 214. It has been found that, so far as the rust flora is concerned, the Cuban flora resembles that of North America while the Porto Rican flora resembles that of South America. One noteworthy fact in connection with the West Indian rusts is the large number of short-cycled species. It has been preciously supposed that short-cycled rusts were an adaptation to a short growing season. Under tropical conditions, twenty-five per cent. of the species are found to be short-cycled, a fact which is directly contrary to previously accepted theories.

Dr. Trelease presented the paper on the parasites of *Meliola* in Porto Rico which was to have been read by Dr. F. L. Stevens.

A number of fungi associated with *Meliola* which were previously supposed to represent a stage in the development of the *Meliola* are now known to be parasites. A list of about thirty such species has been prepared for publication, belonging mainly to the ascomycetes and imperfects.

G. W. Keitt next read a paper on the leaf spot of cherries. Cherries are cultivated extensively in the region studied and the leaf spot has been very destructive. The paper was limited mainly to the methods of controlling the disease. Control has been accomplished along two lines: (1) sanitation and (2) spraying. Both together have been found to be very effective. Several different kinds of sprays have been employed. The effectiveness of the control was well illustrated by means of lantern slides.

W. C. Coker spoke on the genus *Amanita* in the South. The material on which this paper was based was collected in the same general region in which Curtis and Ravenel collected many years ago. According to Coker, there is no good reason for separating the two genera *Amanita* and *Amanitopsis*. Specimens found growing in large numbers in close proximity showed the presence of the veil to be very inconstant. In many cases, it simply failed to develop. Interesting discussion followed the reading of this paper.

The next paper was by J. Rosenbaum on strains of *Rhizoctonia*. Two strains of this fungus have been isolated from the stems of potatoes, which can be distinguished pathologically, physiologically, and morphologically. It is possible that the presence of different strains may account for the conflicting reports regarding artificial infection by the fungus.

C. W. Edgerton spoke briefly of disease resistance to certain fungi in tomatoes. There is a great deal of difference in the susceptibility of plants grown in the same field. Selection and crossing of plants have shown good results in the production of immunity to the disease. Discussion followed the reading of the paper.

R. H. Colley gave a very interesting paper on the mycelium of the white-pine blister rust, calling attention to the way in which the haustoria penetrate practically every cell in the infected region of the host, often causing the nucleus to be pushed in on one

side. The paper was well illustrated by lantern slides showing the microscopic details.

Owing to the lateness of the hour, the writer failed to hear the reading of the last two or three papers. The meeting was well attended and considerable interest was manifested in the subjects under discussion.

At the Saturday morning session of the Phytopathologists, in addition to the strictly pathological papers, several papers were offered which were of interest mycologically.

One paper which deserves special mention was that by L. H. Pennington on Boleti and mycorrhiza upon forest trees with special reference to those of white oak. It was suggested that some of the mycorrhiza might be strictly parasites rather than mutualistically associated with the host. Attention was also called to the observation of certain sclerotia which appeared to belong to the Boleti and it was thought that possibly the Boleti wintered over in this form. In the discussion that followed, Professor R. A. Harper mentioned the finding of numerous sclerotia in Wisconsin in oak clearings.

F. D. Fromme called attention to root rot of apples caused by species of *Xylaria*. While this fact has been frequently observed, it is almost new to literature. The symptoms and amount of loss were considered and illustrated by a number of lantern slides.

Dr. Arthur read parts of a paper on a key to the aecia of the *Carex* rusts prepared by F. D. Kern which would enable the botanist to identify these rusts by the aecial stage. It was referred to as a clever scheme and the first key of its kind ever undertaken.

E. W. Olive called attention to a rare rust from Porto Rico. This has been classed as an insect gall by local botanists and in fact somewhat resembles one. While it shows certain rust characters, its position with this group is a little uncertain. In the discussion that followed, Professor R. A. Harper suggested that it might be an intermediate form between the smuts and the rusts.

FRED J. SEAVER.